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Factors Associated with Cigarettes Use among High School Students in Jakarta

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Abstract

Background: Tobacco epidemic is in alarming state in Indonesia. More than one-third of people reported as active smoker. The trend of cigarettes use has been vastly growth since past decade particularly among adolescent. The study aims to find out factor associated with cigarettes use among high school students in Jakarta. **Method:** The study design was cross sectional. A selfadministrated questionare were constructed. A total of 1,318 students from 14 schools all over Jakarta were participated. The data was examined by multiple logistic regressions. **Result:** The result revealed the prevalence of cigarettes smoking was 21.5% of experimental and 16.2% of past 30 days. Gender, smoking behavior of mother and brother were found as significant predictors of cigarettes smoking. Being male were five times (AOR:5.323, 95% CI:4.143-6.838) more likely to become cigattes smoker than female. The study showed that tobacco use was major public health threat in Indonesia. **Conclusion:** Government must issue a stronger regulation immediately to reduce tobacco epidemic.

Keywords: adolescent; cigarettes smoking; high school students

1. Introduction

Tobacco epidemic is major global public health disaster nowadays.[(1)] During the last decade, tobacco related death was grasped 50 million lives which was higher than HIV/AIDS, Malaria, and Tuberculosis combined.[(2)] Tobacco use is a leading risk factors of Non Communicable Diseases (NCD) such as Diabetes, Cardiovascular Diseases (CVD), Cancer, and Chronic Obstructive Pulmonary Diseases (COPD).[(3)] Half of those who die due to NCD occur during the prime productive age of 35-69 years old.[(4)] Thus, The World Economic Forum (WEF) 2011 considered NCD as global economic burden.[(5)]

Indonesia is considered as one of highest tobacco epidemic which were ranked at the world's third largest tobacco market according to WHO.[(1),(6)] According to Global Adult Tobacco Survey 2015, the prevalence of tobacco use among male were the highest in the world.[(7)] Previous national survey found that the prevalence of smoking among young adult age of 15-19 was 18.3% overall, 37.3% in male, and 3.1% in Female.[(8)] Tobacco was responsible for 235,000 people death annually.[(9)] The healthcare costs attributed to tobacco related diseases and death reached to 11 trillion IDR each year (1.2 billion USD).[(6),(10),(11)]

Young adult is the most vulnerable group to experiment tobacco smoking.[(12)] Those who start smoking in this age have higher risk to become regular smoker in adulthood period later on.[(13)] In Indonesia, almost 80% of current adult smokers started smoking before age of 19 years old.[(14),(15)] Prior study suggested that adolescent who have at least one smoker within family member was more likely to be long term smoker in future.[(16)] Smet, et all (1999) concluded that having older brother smoke were important predictor of youth smoking in Semarang, Indonesia.[(17)] Afterwards, other variables such as education attainment, social economic status, and urban/rural residence also frequently reported having positive direction with active smoking.[(18)]

The tobacco epidemic in Indonesia is expected to go up continuously since the government hasn't ratified the WHO Framework Convention on Tobacco Control (FCTC). In Asia Pacific region, Indonesia is the only country that have not ratified the treaty yet.[2] In addition, the enforcement of existing regulation including smoke free area, and pictorial health warning in tobacco package has not been comprehensively evaluated.

Although tobacco epidemic in Indonesia is very high, the article on determinant of tobacco smoking published in international peer review is scarce. Therefore, update information is needed in order to fill this research gap. This study aimed to find out individual and social background in relation to cigarettes smoking behavior among young adult in Indonesia.

2. Method

The study design was a cross sectional school based survey. A total of 14 schools based on location (suburban and downtown) were randomly selected through multistage technique. The detail explanation of sampling procedure was explained in another article. A total of 1,318 students aged of 15-19 were recruited. The data were obtained by self-administrated questionnaire.

The independent variables were consisted by gender, school location, living arrangement, parent's education (either father or mother highest education attainment), and working situation. In addition, we also included smoking behavior among friend, father, mother and sibling into account. These variables were accessed by dichotomous format (never and ever smoking).

The outcome variables were assessed by asking "Have you ever tried or experimented cigarettes smoking, even in one or two puffs?" and "During past 30 days, are you still smoking cigarettes?" Those who answered "yes" and "no" in both questions were classified into (1) a current smoker and (2) an experimental smoker respectively. Afterwards, those who answered "yes" in lifetime but "no" in past 30 days were classified as (3) a non-smoker.

3. Result and Discussion

From 1,318 respondents, there was 21.5% of experimental and 16.2% of past 30 days smoker (Table 1). The proportion of smoker-experimental and current-among male were considerably higher than female. A total of 34.3% male students were classified as experimental smokers while among female reached to 13.9%. In addition, the prevalence of current cigarettes smoking user among male and female were 29.2% and 8.5% respectively. Descriptive analysis was presented into Table 1 which elucidated smoking status divided by gender. Before test of association conducted, the outcome variables were regrouped into ever smoker and nonsmoker. Current smoker and experimental smoker were merged into ever smoker. Bivariate analysis was performed by Chi-square test (X^2) with significant association defined with $p<0.005$. Moreover, the results of Multiple Logistic Regression were presented by Odds Ratio (OR) with 95% confidence interval.

Table 1. Smoking Status by Gender

Cigarettes Smoking Status	Gender		Total n (%)
	Female n (%)	Male n (%)	
Never	643 (77.7)	179 (36.5)	822 (62.4)
Experimental	115 (13.9)	168 (34.3)	283 (21.5)
Current	70 (8.5)	143 (29.2)	213 (16.2)

Over half (63.5%) of male gender respondents reported ever tried cigarettes while in female reached to 22.3% (Table 2). Nearly half (43.4%) of the respondents aged 17-19 years old ever smoked cigarettes. The proportions of respondents from downtown school were higher than suburban (41.5% vs 35%). Furthermore, gender, age and school location was found significantly associated with ever use of cigarettes.

Table 2 shows that in terms of family background, respondent who live under supervision of both parent reported having less cigarettes smoking proportion (36.8%) compare to other groups with p-value <0.05. Moreover, nearly than half (40.4%) respondents who come from highest education family had ever smoked cigarettes. However, there was no statistically significant different found between parents education attainment with ever used of cigarettes. Likewise, those whose parents have a permanent

work reported having greater proportion of cigarettes smoking. Nevertheless, no significant association was found between father and mother working situation with experimented cigarettes smoking.

Nearly half of those who ever tried cigarettes reported having father and sibling smoking, 40% and 42.8% respectively. There were marginal association found between father and sibling smoking history with cigarette smoking behavior (p<0.2). In contrary, statistically significant different were found between mother (p<0.01) and close friend smoking (p<0.001).

Table 2. Correlates between Independent Variables with Ever Cigarettes Use

Independent Variables	Cigarettes Smoking		p-value
	No	Yes	
	n (%)	n (%)	
Gender			
Female	643 (77.7)	185 (22.3)	<0.001
Male	179 (36.5)	311 (63.5)	
Age (years)			
15-16	596 (64.9)	323 (35.1)	0.005
17-19	226 (56.6)	174 (43.4)	
School location			
Suburban	506 (65)	272 (35)	0.016
Downtown	316 (58.5)	224 (41.5)	
Living Arrangement (living with)			
None of Them	30 (46.9)	34 (53.1)	0.032
Either father or mother	92 (62.6)	55 (37.4)	
Both of Them	700 (63.2)	407 (36.8)	
Parents education			
≤ Primary	31 (68.9)	41 (31.1)	0.143
Secondary	432 (64.4)	239 (35.6)	
Higher	359 (59.6)	243 (40.4)	
Father working situation			
Not Working	67 (67)	33 (33)	0.32
Working	755 (62)	463 (38)	
Mother working situation			
Not Working	531 (64.1)	298 (35.9)	0.1
Working	291 (59.5)	198 (40.5)	
Father Smoking			
Never	416 (64.9)	225 (35.1)	0.069
Ever	406 (60)	271 (40)	
Mother Smoking			
Never	798 (63.2)	464 (36.8)	0.002
Ever	24 (42.9)	32 (57.1)	
Sibling Smoking			
Never	695 (63.4)	401 (36.6)	0.082
Ever	127 (57.2)	95 (42.8)	
Close Friend Smoking			
Never	272 (80.7)	65 (19.3)	<0.001
Ever	550 (56.1)	431 (37.6)	

Table 3 reveals that gender, smoking history of mother and close friend were strong predictors of cigarettes smoking among high school students in Jakarta, Indonesia. Being male were five times (AOR: 5.323, 95% CI: 4.143-6.838) more likely to become cigarettes smoker than female. In addition, the odds of ever use cigarettes were three times greater 3.103 (1.714-5.618) among those who have mother as a smoker than non-smoker.

Table 3. Crude and Adjusted Odds Ratio (AOR) with 95% CI of Cigarettes Smoking

Independent Variables	Crude OR (95% CI)	AOR+ (95% CI)
Gender		
Female	1	1
Male	6.039 (4.721-7.724)	5.323 (4.143-6.838)***
Age (years)		
15-16	1	n.s
17-19	1.412 (1.111-1.795)	
School location		
Suburban	1	n.s
Downtown	1.319 (1.052-1.653)	
Living with parent		
None of Them	1	n.s
Either father or mother	0.527 (0.291-0.955)	
Both of Them	0.513 (0.309-0.851)	
Parents education		
≤ Primary	1	n.s
Secondary	1.225 (0.693-2.348)	
Higher	1.499 (0.781-2.876)	
Mother working situation		
Not Working	1	n.s
Working	1.245 (0.808-1.919)	
Mother working situation		
Not Working	1	n.s
Working	1.212 (0.964-1.525)	
Father Smoking		
No	1	n.s
Yes	1.234 (0.987-1.543)	
Mother Smoking		
No	1	1
Yes	2.293 (1.334-3.941)	3.103 (1.714-5.618)***
Sibling Smoking		
No	1	n.s
Yes	1.296 (0.967-1.738)	
Close Friend Smoking		
No	1	1
Yes	3.279 (2.433-4.42)	2.301 (1.672-3.167)***

+: Stepwise Conditional Logistic Regression includes all variables, n.s= non-significant ***p<0.001

This study reported 29.2% of high school students were current smokers which were higher prevalence when compared to other studies in similar age group. For instance, the prevalence of cigarettes smoking in age 15-19 years old were 27% according basic health survey 2013.[19] The rate was also greater compare to a younger age group (13-15 years old). Based on GYTS report in Indonesia the prevalence of study also revealed higher 22.5%.[8]

The facts above show cigarette smoking remains major public health problem in Indonesia. Lack of prevention program and extensive tobacco industry in targeting young people were accused as root cause of tobacco epidemic.[1] Moreover, tobacco industry continuously created the conditions in which tobacco use is considered as something normal, reasonable and acceptable in the society.[20]

Afterwards, those who reported ever experiment cigarettes smoking had father and mother actively smoking, 40% and 57.1% respectively. Smoking culturally becomes internalized habit among young in Indonesia. The qualitative study among teenage from 13 to 17 years old in explain young perception about smoking, they emphasized smoking was common everywhere whereas non-smokers perceived fewer around them. If I don‘t smoke, I will feel inferior to my friends, because I‘m the only one who doesn‘t smoke.[21]

There were huge gender differences on smoking behavior in Indonesia. Study results revealed 62.7% smokers were male. The result was in line with some previous studies where male have higher prevalence of smoking than female.[18] The finding was reasonable, previous qualitative research in Indonesia has underlined smoking as a part of normal male behavior and as a symbol of masculinity.[21] The image of masculinity also promoted actively by tobacco advertisement.[20],[21] In contrast, while smoking for males is a symbol of masculinity, female smoking was recognized as an inappropriate behavior culturally.[21] However, Despite male tend to more likely smoking cigarettes than female, the trend of

female smoking had gradually increased worldwide.[22] In Indonesia, the increment of female smoker reached to 400% during past 20 years.[9]

The sample sizes of the study were very large to represent a province. However, there was some limitations include the research design of this study was cross-sectional that couldn't fully explained the process of behavior change. Afterwards, under reporting remains big issue on study since the subjects were mainly female students. In addition, the study only covered general type school owned by government. However, this study provides useful information for public health advocates and government to endorse stronger tobacco control regulation in Indonesia such as banning tobacco advertising, enforcing smoke free area, increasing tobacco tax and price, and adopting plain packaging for tobacco product which were successfully implemented in Australia.

4. Conclusion

This research summed up that gender, smoking behavior of mother and brother were found as significant predictors of cigarettes smoking. Being male were five times (AOR: 5.323, 95% CI: 4.143-6.838) more likely to become cigattes smoker than female. The study showed that tobacco use was major public health threat in Indonesia. Government must issue a stronger regulation immediately to reduce tobacco epidemic.

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